

STAR OF INDIA  
Report on Restoration

\* \* \*

Karl Kortum

Star of India  
Report on Restoration  
11/20/1964  
Karl Kortum

## STAR OF INDIA -- AN APPRECIATION

My first sight of her was through a lumber yard, not inappropriate in view of her years for J. J. Moore and Company. The old bark, just six years short of being a century old, looked dark and ancient, and as I walked down abreast of her, I was confronting an antiquity in hull form that I had seen in pictures but never in real life. There was a feeling of the 1850's or even '40's about her dumpy shape with its lack of sheer, low beakhead and squarish stern.

I went aboard and, marvelous, the feeling was intensified. What a privilege, I thought, to get off a United Airlines plane in San Diego and quietly saunter aboard the latest thing in naval architecture for the year 1863. It is a privilege that will be vouchsafed me (with luck) maybe three times more in my life -- aboard the CUTTY SARK, the CHARLES W. MORGAN, and the VICTORY. I had the feeling here, in old San Diego, that I was getting mighty close to Dana, and indeed the STAR OF INDIA was built only 28 years after his spell on the beach here with the Kanaka hide curing crew and the smart ALERT finally taking him away.

Here was a narrow little ship with truly a "waist" in the old time meaning of the word -- an area confined by remarkably high iron bulwarks on either side (the pinrail near their top instead of a foot or so below the topgallant rail). In the center of this area rose the stocky bole of the lowermast (a remarkably short spar) and abaft it an antiquity of teak and brass that took my breath away. This was the main fiferail -- much larger than the same fitting on BALCLUTHA and arced around the after side of the mast with turned stanchions large and small supporting it and a multitude of sheaves let into its base. The scores for these sheaves were all set off with brass castings and the look of the thing put me in mind of jeers, ephroes and other bits of vanished gear from the navy of Charles II.

I walked forward and came to a deckhouse built by the Alaska Packers maybe fifty years ago and by now rich with an aura of its own. Inside it was beamed, low, worn, and hadn't smelled paint in a quarter of a century. If ever

Harvard Division  
Restoration Summary  
Reorganization of Material

this old bark were to be restored it would be well to let this anachronism be -- it is an exhibit from the days of Chinamen traveling north and times when the Alaska Packers fleet numbered more wooden square riggers than iron ones like this.

Forward of that was the tiny fore hatch -- like the main and mizzen hatches with a coaming little more than a foot high. The fo'c'sle head was low and it was necessary to duck to get under it. A row of blocks were strung up under there and I was envious of a couple of the more ancient ones. Amidships was a Providence windlass made in this country -- the more I thought about it the more I was convinced that the log windlass we have on the main floor of the museum in San Francisco probably came from this old EUTERPE, and not from the more modern STAR OF FRANCE, as we have it labelled. (I have heard that it originated on one or the other of these two vessels).

The fo'c'sle head itself was dominated by a Providence patent capstan with a cast base built to accomodate a messenger chain from the donkey engine that J. J. Moore must have installed. (When I got back to San Francisco I found the capstan and windlass advertised as a unit in the American Windlass Company catalogue of 1894). Forward of the capstan was a large cruciform mooring bitt which rather surprised me, but which shows in the picture of the ship in her prime at Port Chalmers, New Zealand. This picture arrived last week from Wellington and I brought it with me to present to Jerry MacMullen.

I walked aft, admiring the touch that deadeyes provide above those strange high bulwarks. No modern bottle screws here, after the fashion of our BALCLUTHA, 23 years younger. Everywhere there were details to please a maritime antiquarian -- the fore sheet bitts being square in cross-section instead of round, the S-shaped forging supporting the outer end of the boatskids was the way Gordon Grant drew it on the CITY OF MADRAS.

Up on the poop I was struck by its narrowness compared with BALCLUTHA -- the STAR OF INDIA seemed half our size instead of being three quarters the BALCLUTHA's size. The reason for this is the half-round that surrounds the poop and narrows it in from the ship's side. Heavy forged straps,

Hagarty's Divisions

Restoration Summaries

Reorganization of Interior



formed in a curve, were rivetted to this half-round to anchor another row of deadeyes on either side. Harold Sommer has always urged, half seriously, that some day we have plates rolled and equip BALCLUTHA with a half-round -- "Those iron and steel ships just aren't right without it.."

A long skylight up here betokened the passenger ship with a big saloon beneath it needing daylight. There was a tall, turned binnacle, a graceful companionway made of heavy teak, but of compact size, and aft a wheel, with a wheelbox replaced at some later period in the ship's life.

I returned to the main deck and entered the poop extension fitted by the Alaska Packers. In the middle of it was the mizzen hatch -- the tiniest of all, seemingly about five by six feet at the most. There was a display here of various maritime artifacts, many fine specimens from the vessel's early life consisting of photographs of her early masters and various documents as well as some good maritime gear in the smaller sizes. It was ranged around the room on shelves, badly displayed.

I entered the saloon itself and was assailed by the story it had to tell of early Victorian passengers traveling to India and the Colonies. It was three times the size of BALCLUTHA's saloon, a long table down the center, space surrounding that for the passengers and their tiny cabins flanking it on either side. The mizzenmast rose through it, the panelling lacked the elegance of the later Victorian; it was, on the other hand, rather quaint. Overhead was the long skylight, and still surviving as an end panel a colored representation of Euterpe, Muse of Music.

Doors led out of this room into a cuddy aft, each door having an etched glass panel in a floral pattern. This little room was again panelled in dark hardwood to the pattern of the saloon. A large stateroom on the starboard quarter contained a large shelf-like bunk with ornamental brass railings on turned stanchions and oval portholes.

The 'tween decks was spacious and with headroom equal to BALCLUTHA's -- surprising in a smaller ship until one remembers the emigrant trade in which she was engaged.



4.

The masts were shorn of all but their lower yards, but it was a pleasant sight to see the stout wooden topmasts with their attendant fittings instead of our more modern pole lowermasts and topmasts in one. The truss for the mainyard was a delicately wrought piece of ironwork looping in to the mast so that the topmasts could be lowered through it without disturbing the lower yards. The yards themselves were slung by a long chain that extended halfway up the mastheads and were supported by a thumbcleat behind.

Of course the STAR OF INDIA was equipped with a jibboom and a marvelously long affair it was. (Moreover she had whisker booms forged of iron projecting from either cathead to spread the guys). The figurehead is small and there is a disturbing and rather ugly gap between it and the beakhead. When I got back to the hotel I studied this on the enlargement from New Zealand and discovered that this gap was concealed originally by a graceful set of hair rails -- the ultimate in decorations -- at the forward end of the ship. How fine they would look restored!

The lower hold was dry and wooden sheathing has been laid over the levelled ballast. Here were the spars that the Navy sent down many years ago, great piles of tarred rigging with deadeyes interwoven in the mass, an ornamental old bucket rack, and the like. I probed at the rust on her plating behind the sweatbands and found that it fell away like powder and left smooth plating. At the heel of each mast was a manhole with a perforated plate bolted over it. I scratched the interior of the masts and found the same condition. The outside of the hull has heavy scale in many places, but the plates look almost  $\frac{3}{4}$  of an inch thick -- I had always heard of vessels so constructed but never actually expected to find one still around.

I went aft and peered down into a mysterious looking afterpeak with odds and ends of gear in the bottom. Right aft are the timber ports that J. J. Moore cut and so square across is she back here, that barely 25 degrees of angle separated the two ports from being in a flat plane. The tuck of an old Indiaman, and indeed India first received her on a maiden voyage that ended the same year that, over here, General Sherman went marching through Georgia.

June, 1957

Star of India  
Restoration Summary  
Reorganization of museum

## OPERATING A MUSEUM SHIP

### HAZARDS AND DIVERSIONS

Before any program can be laid out for the STAR OF INDIA, a philosophy has to be adopted as to what the old ship is going to be. A prodigious amount of energy, effort, time and a considerable sum of money can be poured into the vessel, and, if a good course is charted for her, not a whit of it will be wasted. On the other hand, it is my opinion that if a campaign is started which merely intensifies the present usage, the whole effort will be wasteful, and what is worse, dangerous.

A visit to the STAR OF INDIA gives the impression of a vessel that has drifted into a sargasso of bad habits. It is not entirely a matter of neglect, because there are evidences of affection for, and interest in, the ship abounding on board. This good will can be channelled to even greater benefit for the ship when a program is laid out. The bad habits mentioned amount to bad maritime usage, because STAR OF INDIA is still a ship -- afloat, vulnerable and perishable.

It is quite possible that the pleasant and comfortable backwater into which she has drifted accounts for the decades rolling by without the ship being really taken in hand, and turned into the superior thing for San Diego that she could be. Even now, the vessel is (a) a passable maritime museum, (b) an above average Sea Scout quarters, (c) a good gift shop, and (d) a stimulating setting for an occasional dinner of aficionados of the sea. She has a certain forlorn appeal to the eye even in her present rigged-down state. The signs of wear and neglect around her decks give an effect of quaintness to the visitor.

But for a ship, just about everything in the foregoing paragraph amounts to bad habits.

*Star of India*

*Restoration Summary*

*Reorganization of Museum*

Here is a mish-mash of usage that will sooner or later spell the old ship's doom. For this reason I urge that a new philosophy of intent be worked out as Step Number One in a rehabilitation program. Otherwise it will not be worth the effort.

Presently the ship is in danger from large scale neglect and is in danger of being a third, or a half, or wholly gutted by fire. Fortunately, the neglect of hull, decks and masts have now become a matter of concern to interested San Diegans. I urge that equal consideration be given to the fire hazard aboard.

Scores of iron and steel sailing ships like the STAR OF INDIA have been destroyed by fire. Unless the use of the ship is sharply restricted from what I describe as present bad habits, it is certain that the day will come when a vessel with wooden decks, wooden houses, endless crevices, interstices and compartments in the hands of a skimpy crew and with no watchman patrol (and yet heavily patronized by an interested, if careless, public) will feel the scourge of fire.

I strongly suggest that the purpose -- a museum ship -- for which the STAR OF INDIA will be expensively restored, and by which in the future, through paid admissions, she will earn her living should be the ship's only use. Operating a museum ship out of revenues, and with just a few hands paid by those revenues, is a difficult enough business at best. I would suggest that the whole concentration be upon turning her into an efficient, safe and attractive museum vessel without diversions. This may go against the grain a bit, and upset some long established habits, but the time to make the break is now before the re-birth of the STAR OF INDIA begins.

Use of the vessel as a social hall, as remarked above, is extremely dangerous, as any social gathering implies smoking. In my opinion, that is a mere self-indulgence for the supporters of the ship who ask that space be retained aboard for their gatherings. Insofar as hiring the ship out as a social hall goes, it has been our experience with the BALCLUTHA that this barely pays its way and is not worth the candle: (a) If the general public has to be restricted from the ship there is a loss of revenue from that source that a fee for rental of the ship has to offset, (b) If the maintenance crew aboard, at the most two or three persons, have to turn their efforts for a couple of days preparing for a party and cleaning up afterwards, maintenance in sum total suffers.



At the risk of seeming callous to the aspirations of a new generation, I would urge that Sea Scout use of the ship be discontinued. I speak as a veteran of that organization, and an admirer of it. However, these lads can contribute little to the maintenance of the ship because of their own program and small craft maintenance consuming most of their spare time. Their quarters aboard amount to so much floor space which can easily be had in a hall ashore; it is highly possible that a visit of the Sea Scout ships to the STAR OF INDIA, and an overnight stay aboard, would have far more impact upon the boys than steady occupancy aboard.

Seventeen boys from a Santa Barbara Sea Scout ship have spent the last week aboard the BALCLUTHA under carefully controlled conditions (especially as to clandestine smoking), and I am certain it has been a memorable experience for them. They were allowed to sling their hammocks on board for the week, upon assurance from their leaders that the boys realized that this was no lark, and that they would be willing to pitch in and do heavy ship's work for a part of each day (they scaled the entire forepeak), and that the ship's crew would deal with the group through the Sea Scout leaders. Their visit has benefited the BALCLUTHA (which was our first consideration), and has benefited the boys, too, and they will be welcome again next year.

Except for a special, short push like this, the "maintenance" that Sea Scouts can offer to a commercial craft the size of the BALCLUTHA or STAR OF INDIA is little more than a myth.

Maintenance with a skeleton crew is the hard fact of life around which the STAR OF INDIA's continued existence upon this earth will turn, once she is restored. The improvement of the displays aboard and the mechanics of handling the visiting public aboard are operational considerations, too, but very small ones compared to maintenance.

Maintenance and Safety -- capitalize them and steer clear of diversions, and your ship's life is assured. Neither of them is very glamorous, so when the STAR OF INDIA is restored and more in the public eye, you will find that the bright ideas and helpful suggestions will flow over you and will tend to deflect your helmsmanship. Our experience has been that most suggestions from the outside, no matter how well meaning, are of a genre that take men away from their maintenance work. We have become very miserable and negative indeed when the ship's work might suffer an interruption. The continuing work is her survival.

Balclutha & Star of India  
Restoration Summary  
Reorganization of Historic

RESTORATION OF STAR OF INDIA  
GENERALLY SUMMARIZED:

- A. The most pressing need is for a program of hull preservation. This means stripping the ship internally as much as possible, cleaning (sandblasting, or in some cases sandwashing) the exterior and interior of the hull so that a Marine Surveyor can make a careful inspection of her requirements. Depending upon his recommendations, patching will probably be necessary with steel or iron plate patches welded inside the hull (or cement patches professionally mixed and applied), followed by coating inside and out with the best preservatives and finally a regular program of inspection and spot maintenance carried on in the vessel's interior and periodic drydocking to look after her hull exterior.
- B. The next most pressing need is for a program that will arrest corrosion of iron margins around her fo'c'sle head, hatches and deck fittings, and masts (including bulwarks). Grouped with this is the need to protect her wooden structures, both hardwood and softwood, and to provide deck repairs that will prevent damage by leaks in the vessel's interior.
- C. Next in importance from a maintenance standpoint, but higher on the list as far as showmanship and museum ship display goes, is overhaul of her existing yards, masts and preparation of new spars with attendant fittings for re-rigging the vessel. Most of the rigging needs replacement. It will probably prove to be the most expensive part of the restoration, depending upon the findings of a marine surveyor inspecting her hull.
- D. Next in importance is the need to take existing display materials on board (which are numerous and excellent) and to expand them with the help of additional pieces into a full-fledged maritime museum aboard. A good part of this will be the interpretation of a host of interesting features, inherent in the ship herself.
- E. Of equal importance with the above is arriving at a plan by which the ship will be re-organized internally to make the best possible museum ship, and to handle the visiting public for their maximum education, pleasure and safety. (This will be discussed in the next section of this report).

- F. Least pressing of all on the list, but in many ways a fascinating project for the future will be the rebuilding of portions of the original ship's equipment to an approximation of its state in the year 1863, when she was built. A good example of this would be the removal of the Alaska Packer's windlass, reconstruction of a period "log windlass" operated by a crosshead and pump brake handles on the fo'c'sle head.

Another would be reconstructing the proper teakwood poop bulkhead with carvings at either side, joining the bulkhead to the bulwarks. Still another would be replacing the mizzenmast with a three section mast crossing yards, thereby making the STAR OF INDIA a full rigged ship as she was when originally launched.



## REORGANIZATION OF SHIP'S INTERIOR

STAR OF INDIA at present, like Topsy, has "just grown" into a quasi-public display. Improvisation has been heaped upon improvisation and the result is an arrangement that is utterly inefficient as a museum ship, and in many ways unsafe. Therefore it is suggested that the interior spaces be re-organized so that she can far better fulfill her purpose, as follows:

- 1) That the forepeak, being isolated from the rest of the ship by an iron bulkhead, be converted into a ship's carpenter shop and display preparation shop.\* Wood shavings and electrical tools are both sources of fire and this will permit their isolation in the bows of the ship with an iron door that can be dogged down offering the only entrance.
- 2) That the anchor cables be put ashore and the present chain locker be cleaned, fitted with a false floor, equipped with a ventilator cowl through the deck and equipped with sufficient lighting (electric) to make it into an efficient storeroom for the work shop supplies and paints needed on the deck of the ship. Again, this paint locker is isolated from the rest of the ship by the iron bulkhead, which is a pronounced safety factor.
- 3) That the crude wooden bulkhead a few feet aft in the 'tween decks from the iron bulkhead as described, be dismantled.
- 4) That the Alaska Packer built lockers under the fo'c'sle head on either side be dismantled to restore some of the original under-the-fo'c'sle head form that originally obtained on board, and to allow access to the interior of the ship's plating for maintenance. Deterioration of the shell plating in this area seems far worse than anywhere else on the topsides of the vessel.

\* Dependent on whether further research shows that this was the original ship's fo'c'sle, in which case it should be so outfitted and the carpenter's shop then located in the lower hold.

Reorganization of interior

- 5) That the Alaska Packer deckhouse, which is far wider than the original, be nevertheless retained as a frankly anachronistic structure. The galley itself has a wonderful atmosphere about it. The little pantry forward to port with a sink for washing dishes is a good display area, and the storeroom right forward for dry stores offers good display possibilities.
- 6) The after end of this deckhouse should be converted into a small but attractive apartment for whoever is in permanent residence aboard. The purpose of this would be to divest the important original after quarters of the ship of the hazards that are attendant upon cooking, electrical appliances, and the inherent dangers that go with human occupancy. A fire in the forward deck house would be more readily detectable and more easily controlled, and would not destroy the important antique quarters in the stern of the ship.  
Stove, refrigerator and water heater should all be electrical and the present gas appliances should be dispensed with.
- 7) The ship's business office; the desks, filing cabinets and safe, should be located in one of the after cabins. In the natural course of events this will have considerable occupancy but not of the sort that engenders a fire risk. By having the business office in the after quarters, a substantial surveillance of the visiting public in the after quarters of the ship will result.
- 8) The most unsightly and least seamanlike area aboard at present is the tarpaper poopdeck. This spoils the whole after end of the vessel. From a display standpoint, and in other ways as well, its removal becomes a good investment, although it is realized that a new deck will probably have to be laid. Therefore it is suggested that the most economical procedure would be to remove the extension of the poop added in later years by the Alaska Packers.  
This will expose a fresh section of main deck which will not have to be replaced. The remaining section of poop that will need new decking will thus be considerably smaller and may well come within the range of economic feasibility.

The vessel's appearance will be considerably enhanced by removing this extension; the removal itself would be a very inexpensive matter. A section of wooden pinrail would have to be renewed on either side. Fortunately, the original bulwark construction, including bulwark stanchions, was merely boxed in instead of being rebuilt, as is the case with BALCLUTHA. In years to come a proper poop bulkhead could be reconstructed; in the meantime, the present T & G bulkhead will suffice.\*

- 9) With the cleaning up and varnishing of the remaining teakwood deck fittings on the poop, the crude Doublas fir companionway leading below decks is going to become increasingly conspicuous. It is suggested that this be replaced with the teak companionway now wrongly located on the port side of the poop forward.
  - 10) The foregoing list of suggestions presupposes that the 'tween decks will be developed as the "maritime museum" area aboard, a purpose for which it is admirably qualified.
  - 11) With the spars and rigging in place again, it will be essential that a proper bo'sun's locker and space for the ship's rigger be provided on board. Coils of wire and rope are sizable items and perhaps the best location for this activity would be the lower hold. The rigging shop can be confined in one area. The lower hold, of course, is fascinating to the public and it is suggested that access be provided for them to make their way clear to the bottom of the ship. The rigging activities can be screened off from the area to which the public has access, and the stored coils of wire and rope will add to the atmosphere of cargoes carried in days gone by.
- \* An important display by-product of the removal of this poop extension is that it will permit the installation of boat skids again, the original forward brackets for which are still in place. A standard compass platform would probably be located on the boat skids between the boats. None of these restorations are especially costly, and they would add immeasurably to the style of the ship.



DRY DOCKING -- Continued

2. Apply one (1) coat of anti-corrosive from keel to draft line, port and starboard.
3. Apply one (1) coat of anti-fouling from keel to draft line, port and starboard.
4. Apply one (1) coat boot topping between draft line and deep load line to owner's specifications.
5. Lay out port-painting design in three (3) colors; black, white and gray, to owner's specifications above deep load line and apply two (2) coats marine paint, American Paint Company product or equivalent.
6. Paint in draft numerals fore and aft.

ALTERNATE PROPOSAL:  
(Quote separate prices)

- I. Dry dock vessel, \_\_\_\_\_ gross tons, for cleaning, painting and the following work:
  - A. Cleaning and painting topsides and underwater body.
  - B. Sandblast shell plating from topgallant rail to keel, port and starboard.
    1. Apply from keel to deep load line one (1) coat of wash primer (formula 117) four (4) coats of vinyl primer (formula 119), two coats (2) of vinyl anti-fouling (formula 121).
    2. Apply one (1) coat of boot topping from draft line to deep load line.
    3. Lay out port painting design in three (3) colors; black, white and gray, to owner's specifications above boot topping and apply two (2) coats of marine paint, American Paint Company or equivalent.
    4. Paint in draft numerals fore and aft.

Delaware & Maryland  
+ Federal, water & navy  
100% to the state

ALTERNATE PROPOSAL -- Continued

NB. Vinyl painting has been carefully developed by the United States Navy, and it might be well to ask for Navy supervision of its application.

Until the vessel has been dry docked and sandblasted it is difficult to predict what patching will be necessary on the hull, and therefore no specifications are written for this important area of work.

If sandblasting shows the hull to be wasted through in comparatively few places, the best method would probably be to weld small plates on the inside of the hull, (perhaps a foot square for a hole two to four inches in diameter) and to fill in the outside hole with rivet cement, flushing the cement up level with the existing plating.

If a number of holes are found in the same area, it might be wise to apply a full width steel or iron plate \* that will span the width of the present strakes of plating and extend fore and aft as far as necessary. This is recommended for general strengthening under water, and for the sake of appearances above water where random patches less than the full width of the strake of plating would give a very poor appearance. In the case of the BALCLUTHA, several such plates to the full width of the existing plating strakes were welded on in the area of the forefoot. They were 1/4" in thickness.

A third method that would be quite adequate for a museum ship, although slightly less desirable than the welded patches described above, is the construction of a box inside the hull and the application of a cement patch. Such a patch is common in emergency marine practice, and for a longer usage might be induced to stay in place permanently by welding studs to the inside of the hull in the area of the hole that would penetrate the concrete mix. An investigation should be made as to the proper aggregate for such a patch, the use of mesh for reinforcing in the concrete, etc.

It was noted that various moldings around the exterior of the bulwarks are adrift and it is an optional expense whether to fair them back into place at this time, and run a welding bead on their upper edges to hold them in position.

\* NB. The Byers Wrought Iron Company, Russ Building, San Francisco, might well donate the plating for such repairs for the publicity value of the STAR OF INDIA to their product.

Bulwarks & the hull  
for repairs, which is necessary to have  
top bulwark  
for the hull

## HULL EXTERIOR - Continued

In a few places rust has opened up seams that do not affect the ship's watertight integrity, but nevertheless aid deterioration and look unsightly. This is particularly true in the area of the beakhead bulkhead. These seams should be cleaned out as thoroughly as possible and filled with rivet cement. This is work that can be done by the ship's crew before or after dry docking.

The rudder should be examined for deterioration that will in any way make it unsafe, such as a weakening of the gudgeons or pintles. It gives an appearance of being in reasonably good condition for display purposes.

As it seems unlikely that the vessel will be required to anchor at any time in the future, some time and considerations should be given to disposing of the anchor chains. This will give far better access to the forepeak which is now used as a chain locker than is now the case, and will be of considerable assistance to maintenance of this deteriorated portion of the vessel. A dummy length of chain can be kept for display purposes leading from the anchors in through the hawse pipes, over the wildcats and down through the spurling gates.

From a standpoint of seamanship, there might be a very slight justification for keeping one anchor aboard with its cable. In this case the anchor trip ring stopper and shank painter should all be overhauled so that the anchor can actually be let go by a watchman on board on the unlikely chance that the vessel should break free from her moorings.

## HULL INTERIOR:

The second most pressing requirement for a long range preservation of the STAR OF INDIA is the emptying and cleaning of the interior of the hull so that preservatives can be applied to the iron shell, frames, floors and keelson. Taking this area in hand is second in importance only to dry docking the vessel and applying preservatives to the outside of the hull as previously described.

However, from an operational standpoint, it may be necessary to put off this program for a couple of years. This for the reason that the project faces heavy expenses in two areas that will have to be taken in hand first if she is to get in business and pay her own way. The first of these is the treatment of the outside of the hull, already described, which is a sine qua non if the vessel is to survive at all, and the second is extensively re-rigging her.



## HULL INTERIOR -- Continued

Moreover, the treatment of the interior of the hull can be handled by ship service companies (ship cleaners) who can bring their equipment alongside on trucks or by barge -- it is not necessary that the vessel be in a shipyard.

Procedure on the job is as follows:

1. Remove loose gear throughout 'tween decks area and in lower hold. Sort out the original ship's gear (blocks, deadeyes, rigging wire, etc.) and store ashore in warehouse.
2. Dismantle cargo battens throughout 'tween decks and lower hold. These battens contribute little to the ship's interior appearance and it is probably desirable to not re-install them. (On the other hand, they are authentic equipment and particularly in the lower hold, give an exact idea of what this compartment once looked like. If it is desired to re-install them, it would be well for the crew to number them and make a diagram prior to dismantling, as over the years each piece has taken on a distinctive curvature).
3. Install adequate temporary lighting and scale interior of vessel (concentrating on accumulated scale rather than powder rust).

The foregoing preparation work can be undertaken by the ship's crew, properly augmented and under proper leadership.

1. Sandwash entire interior of 'tween decks including forepeak and deck beams where corrosion is appearing.
2. Sandwash entire lower hold including cable lockers and after peak. Sandwash deck beams, margin plates, mast, partner reinforcing, and other ironwork on the under side of the 'tween decks where corrosion is evident.
3. Paint out entire 'tween decks, fore peak, lower hold chain locker, and after peak with two (2) coats of primer.

HULL INTERIOR - Continued

NB. Sandwashing is a less vigorous and less expensive method of surface preparation than sandblasting. Costs can be saved too, if the ship's crew undertakes to remove the accumulated sand that results from this process.

The STAR OF INDIA has excellent 'tween deck planking with a good appearance. It would be well to use drop cloths on this area prior to the sprayer application of the two coats of primer in the 'tween decks area.

1. Remove planking in lower hold, remove iron ore ballast, lift wooden ceiling and remove iron ore ballast now filling space between the vessel's floors.
2. Sand blast floors, frames, and keelson when exposed and apply protective coating such as Farbertite (available from Jaxon Specialties, 185 Steuart Street, San Francisco), Chem Seal Hull-Cote, (available from ChemSeal Corporation, Marine Division, 12910 Ponema Street, Los Angeles 66) or Tar-Set.

As previously mentioned, this lower, hidden, part of the ship's interior has probably suffered deterioration second only to the exterior of the hull, and taking steps to preserve it is only second in importance to the outside of the hull. It is a job that can be tackled by the ship's crew under careful management and probably with the hiring of part time laborers to help. A suggested plan of attack would be to muck-out the ore ballast down the center-line of the ship first, say in a belt four feet wide on either side of the keel. This would permit clearing the limbers so that the vessel could be pumped dry with a small sump pump, allowing for proper dry conditions for sand blasting and the proper application of the preservative to a dry and clean iron surface, insofar as the transverse floors, frames, and the keelson is concerned.

Safe procedure would probably be to take in by crane sufficient cube concrete block ballast to offset the discharge of the ore ballast down the center-line.

Juliusburg & the Town	1000 & increased	1000	to 234 Head
1. 1st rail, West & N. 1st up to one			

Juliusburg & the Town	1000 & increased	1000	to 234 Head
1. 1st rail, West & N. 1st up to one			

Juliusburg & the Town	1000 & increased	1000	to 234 Head
1. 1st rail, West & N. 1st up to one			

Juliusburg & the Town	1000 & increased	1000	to 234 Head
1. 1st rail, West & N. 1st up to one			

Juliusburg & the Town	1000 & increased	1000	to 234 Head
1. 1st rail, West & N. 1st up to one			



FO'C'SLE HEAD

1. Remove iron railing from fo'c'sle head and send ashore for sand blasting and priming.
2. Remove existing bull rails and nibbing strake port and starboard. Cut fastenings for chock and cleats and send ashore for sandblasting and priming.
3. Chip out cement from nibbing strake on starboard side.
4. With portable sandblasting equipment thoroughly sandblast iron margin plates, deck beam ends and other iron work exposed by removal of bull rails and nibbing strake. Coat with Farbertite, Chem Seal Hull Cote, Tar Set or other primer.
5. Set new nibbing strake and bull rails, coating liberally with Cuprillignum or pentachlorophenol wood preservative. Set new bull rail and nibbing strake in bedding compound manufactured by Minnesota Mining and Manufacturing Company or by Chem Seal Corporation.
6. Replace hand rails, chocks and cleats.
7. Replace light formed angles which act as chafing pieces on bull rails with new metal. (NB. It would be well to take a photograph on the position of the angles prior to dismantling the bull rails).
8. Fit new lengths of planking at after ends of fo'c'sle head as necessary, staggering butts on alternate deck beams.
9. Re-finish four stanchion teakwood railings, cleaning to bare wood and finishing with spar varnish and replace across after end of fo'c'sle head.
10. Replace iron stanchion on port side of break of the fo'c'sle head in similar position to starboard side. (This stanchion is now on top of forward house).

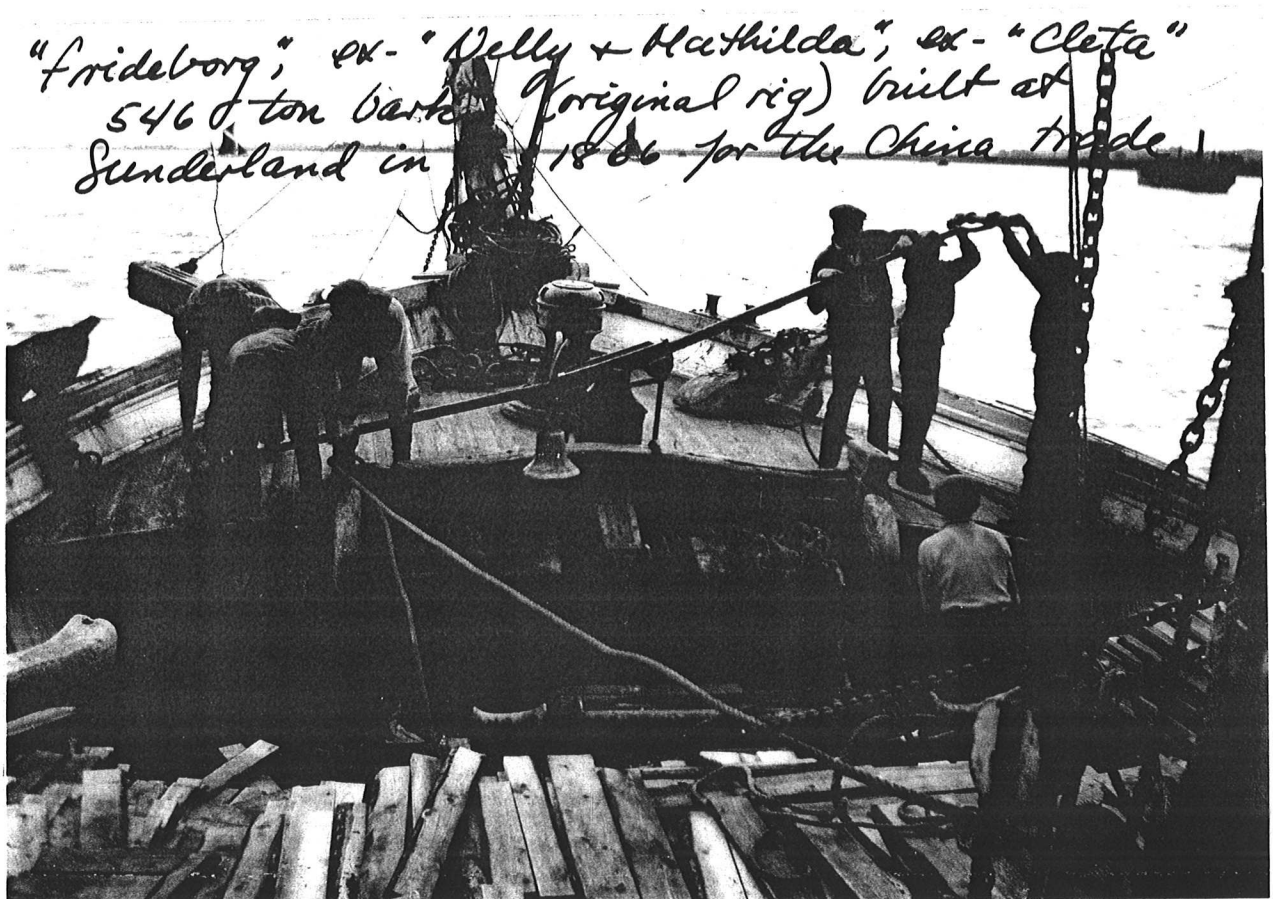
FO'C'SLE HEAD -- Continued

11. Furnish two (2) teakwood ladders to fo'c'sle head to pattern of poop ladders used on ship BALCLUTHA.
12. Fit iron railing (double) to pattern of railings used on ladders on ship BALCLUTHA on either side of both ladders, using teak railing at break of fo'c'sle head to anchor inboard railing at upper end and iron stanchions on break of fo'c'sle head to anchor head of railings on outboard side.
13. Seize two (2) short lengths of chain between iron stanchions at head of ladder and ship's railing port and starboard.
14. Fit graving pieces in fo'c'sle head deck where necessary, eliminating roller to patent capstan and ventilator opening on starboard side.
15. Re-finish knighthead bitts for jib down hauls to bright wood and finished in spar varnish. Supply missing brass diamond-shaped caps.
16. Scale, wire brush and prime ironwork on catheads as necessary.
17. Re-finish wooden sidelight screens and equip iron receptacle for running lights with cover port and starboard.
18. Hawse down existing caulking and re-caulk; pay seams with marine glue.

Further photographs of the ship should be secured from the Alexander Turnbull Library, (Mr. Honey, Photo Department) Wellington, New Zealand, for a study to determine whether a ventilator extended through the fo'c'sle head deck just forward of the cruciform bitt. If the theory is correct that the crew's fo'c'sle was in the fore peak right forward, the existence of this ventilator seems likely. A half-round shaft for it exists and the plates at top and bottom have been pierced in a half circle. (This shaft supports the bowsprit heel).

If further research shows such a ventilator was employed, it should be supplied, with a ring flange mounted on deck to receive it, and the present decking pierced to allow air to enter the fore peak.

If further research substantiates the theory that the bitt formed of iron plate extending through the after end of the fo'c'sle head supported the cross head for the pump brake windlass (and in between decks formed a pawl bitt supporting the log windlass pawls) then an attempt should be made to secure such crosshead. (See photograph).



FO'C'SLE HEAD -- Continued

Dimensions and a drawing of this fitting should be supplied to the Directors of various maritime museums in Northern Europe with a request that they seek to locate such a casting and its fittings among existing Baltic coastal craft.

With the location of a crosshead, iron pump brake windlass handles should be forged and equipped with a wooden cross bar as a significant part of the fo'c'sle head display.

AREA UNDER FO'C'SLE HEAD:

1. Remove all lockers port and starboard except approximately twelve (12) feet of existing wooden starboard locker right forward. This section with two sliding doors remaining can be outfitted as a paint locker and locker for bo'sun's stores.
2. Sandblast interior of bulwarks port and starboard and inner end of bowsprit.
3. Weld patches as necessary over holes in shell plating.
4. Fit doubler plates over holes in bowsprit.
5. Chip out cement in waterways and in other patched areas and treat metal with Consol Oil. Spray interior of iron pawl bitt with Consol Oil and close openings on deck that will allow moisture to enter. Patch open seams in lower part of post with rivet cement.
6. Build small wooden lavatory port and starboard to pattern of existing woodwork and fit with modern flush toilet connecting through original opening in side of ship. Location of these lavatories should allow of existing porthole centering in each structure.



AREA UNDER FO'C'SLE HEAD - Continued

7. Undertake research to determine whether log windlass previously occupied space now used by patent Providence windlass. (See previous page). Re-construct log windlass to pattern of windlass in San Francisco Maritime Museum.

Contact David R. McGregor: 39 Fife Road, East Sheen, London S. W. 14, England, or Harold Underhill: 60-62 Queen Elizabeth Avenue, Hillington, Glasgow, S. W. 2, Scotland, for a pattern for bearing support on either side and details regarding connection of arms extending through fo'c'sle head from crosshead to the ratchet tracks on the windlass.

(NB. A log windlass, in all probability, would be located further aft than the present windlass -- about in the location of the present hatch to the fore peak -- as it would be necessary for such a windlass to be closer to the iron pawl bitt in order that the linkage and pawls could be joined up. If such a windlass was eventually installed aboard the STAR OF INDIA the present hatch coaming entering the fore peak can be moved to a position farther forward).

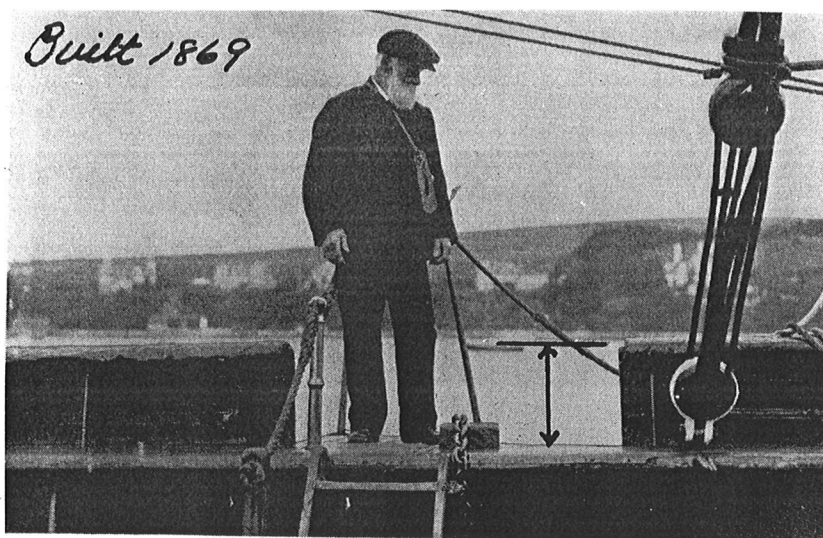
Presumably the log windlass would be on the forward side of the pawl bitt, although, as the photograph shows, this was not always the case.

#### BULWARKS AND HATCHES:

1. Remove existing pinrail from full length of bulwark port and starboard. (NB. A series of sectional photographs showing each wooden rail in its entirety should be taken from overhead prior to the removal of the railings in order that the various openings and fittings can be re-located when the wooden rails are replaced).
2. Scale concrete out of scuppers.
3. Sandblast interior of bulwarks port and starboard.
4. Reinforce angle at top edge of bulwarks as necessary to receive new wooden pinrail.
5. Inspect chain plates below deadeyes for a serious wasting of metal and weld in short sections of iron bar as necessary where extreme wastage occurs. Replace deadeye straps where seriously weakened by metal wastage.
6. Replace wooden rail to pattern of old rail port and starboard entire length of bulwarks. (NB. For display purposes it may be possible to salvage some sections of the original hardwood railing and to scarf them into the new railings more or less as a "talking point".)
7. Replace foresheet bitts and other fittings in original railing.
8. Extend 6 x 12 presently located just aft of fo'c'sle head on top of railing entire length of bulwarks as is

## BULWARKS AND HATCHES, Continued

shown in photograph of vessel lying at Port Chalmers. Provide openings in this topgallant rail as shown in photograph with carvings as shown. Replace carving forward at break of fo'c'sle head on starboard side to pattern of carving on port side.



In 1924, Captain Woodget joined the *Cutty Sark* for a coastal trip to Fowey. When her old master returned to the ship he had not seen for twenty-nine years, there was a moment of deep emotion as he stepped aboard.

9. Fit hardwood caprail three by eight (3 x 8") inches entire length of topgallant rail. Caprail to be formed in shape of a bead (single convexity) inboard and outboard.
10. Refit brass chafing pieces on inboard side of pinrail port and starboard.
11. Unship gooseneck stanchions for boat skids, sandblast, prime and refit.

BULWARKS AND HATCHES -- Continued

12. Forge new boatskid stanchion for starboard side forward, now missing, to pattern of existing gooseneck stanchions.
13. Forge two new gooseneck stanchions to same pattern for after boat skids (for installation when Alaska Packer extension of the poop is removed).

Fittings consisting of a square plate let into the wooden rack rail with a socket rivetted to the bulwarks about four feet below each of these pinrail openings are apparently for the purpose of receiving awning stanchions to cover the waist of the ship, and also the area in the vicinity of the fore hatch.

Five such receptacles were noted on each side of the vessel and it is possible that a couple more will be turned up with the removal of the poop extension.

Some research should be undertaken into the rigging of awnings on sailing ships in the 1860's, as revealed in photographs of these vessels in tropical ports in such works as Lubbock's, and a new set of stanchions forged with eyes in the upper end. An awning covered the waist of the ship would create a pleasant atmosphere to the visitor stepping aboard during the summer months. Awning fittings in the waist are far more uncommon than awnings covering the poop, and it is assumed that it is a protection for the emigrants traveling as passengers in the vessel when she was the EUTERPE. It amounts to an interesting old procedure and might well be revived.

14. The streaking of the ship's side below each scupper opening in the bulwarks is one of the unsightly features of the ship. This can be materially reduced if the lower half of each scupper opening is blanked off with a semi-circular steel plate from the outside of which extends a 3" length of pipe, 1" inside diameter. In wintertime or when washing down, a foot-long length of hose

Forward scupper in waist  
+ pinrails, waist + midship house  
poop + mainmast  
poop + mainmast



Forwards company in war  
to forward, March 17, 1860, 1860

HATCHES:

The hatch coamings in the STAR OF INDIA provide a note of antiquity in that they are very low and close to the deck by today's standards. Another interesting aspect of them is their tiny size. The present improvised railings, etc., as built up on them destroys their visual effect, and it is suggested that these be dispensed with other than for the emergence of a couple of handrails for the ladders leading below.

1. Sandblast hatch coamings inside and out and apply two (2) coats of primer.
2. Remove accumulated scale between exterior bead and coaming plate and draw back together with rivets, bolts or welding.
3. Close openings where water is likely to lead to further such scaling with rivet cement.
4. Make grating to blank off fore hatch and remove ladder.
5. Make sectional gratings for main hatch so that major portion of the hatch can be kept covered after providing access for ladder.
6. Provide canvas covers for all three hatches for inclement weather.

FIFE RAILS, PUMPS, AND DOLLY WINCH:

1. Overhaul ship's pumps. Fit with new leathers and liners if needed; fit with new pipe sections and roseboxes.
2. Finish stay bitts of forward fife rail down to bare wood and refinish with spar varnish. Polish brass caps.
3. Remove fir pinrail on either side and replace with teak fiferails butting into after side of bitts and supported on turned stanchions to pattern of small stanchions in main fiferail.

Bearings on the forward part of these two bitts are apparently for a dolly winch for the hand discharge of cargo. This would be an interesting reconstruction, and an inquiry circulated in the Liverpool magazine "Sea Breezes" asking for deck scenes aboard early iron sailing ships would show such an arrangement and provide adequate research for their restoration. It would probably be a simple affair of large and small gears with wooden winch heads extending on either side of the bitts, and iron cranks to put the whole machine in motion.

This dolly winch discharged the cargo out of the forward hatch. (See photograph of ship DERBYSHIRE on page 134 of "San Francisco Bay - A Pictorial Maritime History" and page 9 of pamphlet entitled "The Cutty Sark and Days of Sail" by Frank G. Carr.

#### MIDSHIP HOUSE:

1. Burn paint off of midship house and repair door slides and window sash and replace missing lights.
2. Repair and make watertight the skylights in overhead.
3. Refit former donkey room at after end of house as living quarters with combination stove, icebox and water heater, all to be electrically operated.
4. Partition off space for lavatory and outfit with washbowl, toilet, and install shower.
5. Blank off after end of deck house with T & G to same pattern as used on sides of house, and pierce for three square windows of same pattern and same height as square windows in side of house.

#### MAIN DECK:

Repair main deck as necessary with graving pieces where deteriorated. Hawse down existing caulking, recaulk throughout, and pay seams with marine glue.

#### TOP OF DECK HOUSE:

(See specifications above for main deck).

#### LOCATION OF POOP BULKHEAD:

Reconstruction of the entire break of the poop area to its original state, while not a pressing project, would add greatly to the distinctive antique atmosphere of an early day passenger ship.

However, until more research is completed, a question remains as to the location of the poop bulkhead. This was undoubtedly a structure of panelled teakwood and a handsome adornment of the vessel.

The original deck beams over the poop area are of a T section, whereas the deck beams supporting the Alaska Packers extension (which does not enter into this discussion) are of an L section. The foremost of the T deck beams supported the edge of the break of the original poop and is drilled right across the ship with a series of staggered holes.

This series of holes would seem to indicate the fastenings, probably bolts, for the original poop bulkhead. This would put the bulkhead flush with the edge of the poop.

However, the photograph of the ship taken at Port Chalmers, probably in the 1870's, after she had been purchased by Shaw, Savill and Company and placed in the New Zealand emigrant trade, gives an indication that there was no bulkhead flush with the edge of the poop a dozen years after the ship was launched. The photograph appears to show a shadow under the edge of the poop which would indicate an overhang of several feet.

Was the original flush bulkhead moved back when the vessel was put in the emigrant trade? Or was the series of staggered holes in the foremost deck beam drilled in the builder's plate shop for the convenience of the joiners in attaching the usual heavy wooden beading that finished off the forward end of the poop in those days? The number of holes seems excessive for this kind of duty.

Jerry MacMullen points out that the wide deck planking used in the saloon area joins up with narrower deck planking used on the weather deck right under the drilled beam. If, indeed, two different widths of deck planking were originally built into the ship and this is their joining point, then another powerful argument is lodged for the location of the poop bulkhead right forward when the ship was launched. (On the other hand, there is



## LOCATION OF POOP BULKHEAD - Continued

some possibility that the ship's decks were renewed here on the Pacific Coast at some time, using the present standard weather deck planking which met with the original wider planking in the area under discussion).

The original poop extended nine feet beyond the forward end of the passenger saloon. If the 1875 photograph\* is read correctly, and the poop bulkhead was moved back, how far is it recessed? If it were carried back the whole nine feet then there would be no rooms forward of the saloon and its flanking passenger cabins. This seems unlikely because it would eliminate a steward's pantry, a useful station between the galley and the cabin table for the handling of food and tableware, particularly in a passenger ship.

On the other hand, when Shaw Savill took over, the poop bulkhead may have been pushed back all the way in a conscious effort to form a large out-of-the-weather vestibule where the steerage passengers could find shelter. One of the forward passenger cabins could have then been converted into a pantry, or the pantry dispensed with. A second advantage of a nine foot vestibule would be that small utility rooms for the steerage passengers could be built on either side. There might be a 'head' for the emigrants, men and women on opposite sides of the ship, or conceivably a washroom or a hospital on one side, nine feet long. The original oval port-holes in the ship's would provide light and air in these marginal rooms.

However, it seems hardly feasible that new owners would go to the cost of removing a flush poop bulkhead and moving it back only enough distance to accommodate a lamp locker on one side and a head on the other. If the photograph speaks rightly and the bulkhead was pushed back at all, then it may well have gone the whole nine feet until it encountered the area of first class cabins.

There is one other solution to this question raised by the discrepancy between the drilled beam and the photograph taken after the ship had changed trades. The original bulkhead, flush with the drilled beam, may have been stove in by a sea. The owners would then have had an excuse to replace it the conventional four to six feet back, with lamp locker on one side,

\* date of this photograph has not yet been fully substantiated.

LOCATION OF POOP BULKHEAD - Continued

officer's head on the other, and still space for a steward's pantry (and storerooms) before entering the main saloon.

A development of this area can most accurately be accomplished by circularizing inquiries among maritime scholars throughout the world. The best approach would be to draw a sketch of the area in question with the probable divisions indicated by a dotted line and published in the letters column of "Sea Breezes" magazine (Charles Birchall & Sons, Ltd., 17 James Street, Liverpool 2, England), in the annual "Dog Watch" (Box 1169K, G.P.O. Melbourne, Australia), and "Ships and The Sea" magazine, (1027 North 7th Street, Milwaukee 3, Wisconsin).

Additionally, such interested persons and collectors as the following should be circularized with a letter inquiring in particular whether they have photographs of contemporary British ships showing the break of the poop area (the same procedure should be followed with the knotty question of the location of the log windlass forward and other such conundrums) or whether they have blueprints of the vessels of the period that would cast light on the subject:

Mr. Harold Underhill  
60-62 Queen Elizabeth Avenue, Hillington  
Glasgow, S. W. 2, Scotland

Mr. David R. MacGregor  
39 Fife Road, East Sheen  
London, S. W. 14, England

Mr. A. D. Edwardes  
108 Sydney Street, Glenunga  
South Australia

Mr. R. C. Shepherd  
Apartado 4418  
Lima, Peru

Miss S. A. E. Strom  
Box 1169K, G. P. O.  
Melbourne, Australia

Mr. Gerhardt Albe, Director  
National Maritime Museum  
Stockholm, Sweden

POOP BULKHEAD - Continued

Mr. Frank G. G. Carr, Director  
National Maritime Museum  
Greenwich S. E. 10, England

Director  
Musee del la Marine  
Palaise de Chaillot  
Paris, France

Mr. Andrew Nesdall  
250 Quinobequin Road  
Waban 68, Massachusetts

Dr. John Lyman  
7801 Gateway Boulevard  
Washington, D. C.

Additionally, an inquiry might be circulated in the British shipping magazine "Fair Play" (Palmerston House, Bishopsgate, London, E. C. 2, England) asking in particular after one of the vessel's early owners and whether descendants would have any plans or photographs, British Societies of Naval Architects (addresses may be secured from "Fairplay" magazine) may be circularized, Shaw Savill should be contacted, and, of course, all inquiries should be published, if possible, in the newspapers on the Isle of Man and in Liverpool.

#### OVERHAUL OF POOP DECK FITTINGS:

- 1.. Remove extension of poop including iron half-round on either side and deck beams. (Remove from seam in half-round just forward of foremost oval portholes).
2. Fit half-round mouldings on exposed deck ends thus revealed. If possible salvage existing mouldings for this purpose.
3. Extend construction of pinrail on either side and t'gallant rail, etc., from abaft mainmast rigging to new poop bulkhead. (N.B. Apparently a majority of, if not all, the original bulwarks stanchions are still in place on either side of the ship throughout this poop extension. This may well obviate any iron work at all in the process of lopping off the extra length of poop. The whole waterway, including the bulwark stanchions, has apparently been boxed in on either side.)
4. Remove existing tarpaper and clean accumulated tar from ship's fittings with torches; remove original poop deck and re-deck.

Before laying this deck, remove sounding machine, two ventilators, one smoke stack, two iron tanks and the crude fir companionway abaft the skylight. Blank off the openings for this sort of anachronistic fittings when the new deck is laid.

5. Remove companionway forward on port side and clean to bare wood. Fit graving pieces and repair wood as necessary. Relocate this companionway forward of wheel and in fore-and-aft position, replacing existing fir companionway.



POOP DECK FITTINGS - OVERHAUL, Continued

6. Clean skylight to bare wood. Remove all brass gratings and send ashore to metal polishing shop for cleaning. Fit graving pieces in skylight and repair as necessary.
7. Remove EUTERPE glass panel at after end and send ashore for duplication in an ornamental glass work, duplicate to be fitted in forward end of skylight.
8. Clean binnacle to bare wood; repair as necessary and finish with spar varnish. Fit with wooden extension (square in section) and binnacle hood as shown in Fort Chalmers photograph.
9. Clean wheelbox cabinet to bare wood; fit graving pieces and repair as is necessary. Fit gratings in form of a seat on either side supported by turned stanchions to pattern of ship BALCLUTHA. Finish in spar varnish.
10. Provide fitted canvas covers for companionway skylight, binnacle, wheel and wheelbox.
11. Move present ladder (or make substitute of teak) to position further aft, leading amidships up onto shortened poop. Fit turned newel post at either side at bottom of steps and fit moulded teak railing three by four (3 x 4") inches in section from newel post to top of ladder with slight flair outboard of railing on either side at upper end.
12. Fit two turned stanchions (with knob head) to receive upper end of this railing at forward end of poop deck.

POOP DECK FITTINGS OVERHAUL - Continued

13. Supply six (6) new iron stanchions to form of existing stanchions around poop railing to span forward end of poop. (One of these stanchions to be the forward outboard stanchion of the poop railing on either side).
14. Supply ship's railing teakwood milled to form of present railing. Extend forward from end of existing railing to form corner and run inboard to butt against turned stanchions at either side of head of poop ladder.
15. Repair existing wooden poop railing where necessary; clean to bare wood and finish in spar varnish.

A choice exists on the re-location of the handsome old teak companionway now located on the forward end of the poop to port. This companionway is not in its original location, and it is even possible that it is not an original fitting from the STAR OF INDIA. On the other hand, it may well have been the upper part of a booby hatch which could be set in place on the mizzen hatch when passengers were located in the 'tween decks. The circular being sent to the above-listed sources and authorities might ask for a photograph showing such a booby hatch in place so that its construction could be followed.

Generally the booby hatch would consist of a shallow, flat teakwood box that would lash down with ring bolts in place of a cargo hatch. Rising from the flat top of this box, and flush with the after side, would be the companionway itself, of a type similar to the one now existing on the port side of the poop.

The other use for this companionway (See #5 above) would be to move it aft and use it just forward of the compass as the entrance to the cuddy in the after end of the saloon, eliminating the crude fir companionway now existing.

If the companionway were so located, it should face forward and the rather ugly ladder way existing in the cuddy should be dismantled and a fore and aft ladder made and installed.

Forward Display Area 'Tween Decks  
Masts & Rigging  
Furniture & Miscellaneous

## POOP DECK FITTINGS OVERHAUL - Continued

The iron deck beam amidships overhead in the cuddy will be seen to be cut to allow of this fore and aft ladder. (With the installation of the present crude athwartship ladder of the Alaska Packers, the section of iron beam was spliced in. This can, of course, be removed). This fore and aft ladder ended on a low platform, or landing, in the cuddy with athwartship steps on either side.

### CABINS:

The saloon, passenger's cabins and officer's cabins and cuddy under the poop are, of course, one of the most remarkable features of the STAR OF INDIA and by great good fortune there has been no serious alteration to these quarters during the past 95 years.

This report has previously recommended that the operating personnel for the museum ship not be quartered aft here because of fire hazard, particularly that engendered by cooking apparatus, water heaters, electrical appliances, smoking and the like. The Captain's cabin is always of surpassing interest to the public, and it might be well to outfit this cabin with the many small details of every-day living that an old sea captain would enjoy, and to allow the public to view the area but not to enter; a screen formed of reinforcing mesh in 6 inch squares, blocking their way, would suffice. The small existing pantry on the starboard side, although not original, might similarly be screened off and fitted with period stewards' appurtenances. A similar treatment might be given to one of the passenger cabins, although certainly one other cabin should be accessible to the public. As has been previously suggested, one of these aftermost rooms in the ship should be outfitted as a business office, (but strictly on a no-smoking basis) for the ship's staff.

The interior of the skylight is an area that catches the eye of virtually every person inspecting the main saloon, and for this reason it is worthy of a painstaking cleaning to bare wood and a polishing of the brass fittings, and, as previously noted, the fitting of a duplicate glass EUTERPE panel at the forward end of the skylight. The making of an additional panel will provide a diagram of the original in case it is destroyed.

## INTERIOR OF MIDSHIP HOUSE:

Existence of the original coffee grinder and a pair of leather bellows used by the ship's cook, and the possibility of other easily located ship cooking gear in antique stores makes possible a very striking display within the ship's galley which is exceptionally bare of all furnishings except the stove.

The stove itself should be repaired by a stove works, and rid of the present tin jacket.

The present interior finish of the galley, while it sets an excellent mood because of the bare scraped wood, smacks more of an interior of a vessel of the middle ages than a vessel of the mid-Victorian period. As an area out of the Alaska Packers era of the ship's ownership the bulkheads should be painted in Alaska Packer buff and the overhead perhaps a green color. The well-worn deck planking under foot should be treated with a clear floor hardener after cleaning, and the hardener should be periodically renewed. The uneven appearance of the floor will continue to invest the galley with a mood of bygone days. Copper cooking utensils can be obtained and hung on the bulkhead, and the dish-racks can be outfitted with appropriate crockery.

The public should be allowed access to this area, and also to the small pantry with the dishwashing sink forward on the port side. The pantry should be painted out to match the galley.

A screen door, not allowing access, but allowing vision, as has been suggested aft for the captain's quarters, should be fitted between the dishwashing pantry and the room for dry storage right forward in the house. This will permit stocking the shelves in this dry storeroom with a variety of staples used at sea, and the resultant display will attract a good deal of attention by the visiting public.

#### DISPLAY AREA UNDER FO'C'SLE HEAD:

It has been previously suggested that the structures under the fo'c'sle head be removed in order to open up this area. Two small lockers will remain right forward on the starboard side, for bosun's stores, or a possible lamp or paint locker display.

Additionally, crew's lavatories should be built in just under the break of the fo'c'sle head on either side, but for appearance's sake, not flush with the after end of the fo'c'sle head as is the existing Alaska Packers construction. These cubicles should be perhaps four and a half feet square.

The opened-up under the fo'c'sle head area will permit some interesting period displays such as reconstruction of a spunyarn winch which was worked under the fo'c'sle head on rainy days in sea tradition; ship's blocks hanging along the port side, add similar sailorly touches.



#### 'TWEEN DECKS LAYOUT AND DISPLAYS:

Probably the most fitting arrangement of the 'tween decks would be to use the whole length of the 'tween deck as maritime museum area with a division of two parts, to reflect the two phases of the vessel's career.

The forward part of the 'tween decks would have displays reflecting her EUTERPE period (a) as an emigrant ship and deep-water cargo carrying vessel and (b) as lumber drougher in the trans-Pacific export lumber trade.

The after end of the 'tween decks would carry displays reflecting her many years as an Alaska Packer salmon cannery tender, a few years of which saw her going north with the name EUTERPE, but most of which saw her named STAR OF INDIA.

The existing bunks for the Chinese cannery hands existing in the 'tween decks, of course, create a basic mood for this after end of the 'tween decks.

Right aft, if desired, in what was probably the original sail locker area, what sails remain on board could be triced up a sailmaker's bench installed, perhaps even with a dummy sailmaker at work. The light provided by the grating inserted in the timber port aft creates a pleasant effect here.

The public would view this display through a screen which could be either inserted in the wooden bulkhead across the after end of the 'tween decks, or could be carried further aft to the iron bulkhead which has been pierced and from which plates have been removed.

Principal access to the 'tween decks maritime museum area should be with a pair of ladders descending through the main hatch. The ladder on one side of the strongback can be leading forward, and the ladder on the other side of the strongback can be leading aft. The remainder of the main hatch can be covered with gratings.

1. Supply fir ladder 44 inches wide for installation on either side of strongback in main hatch.
2. Make brackets for and fit strongback fore and aft at 'tween decks level in main hatch.

#### CREW FO'C'SLE:

There are strong indications that the crew's fo'c'sle was in the fore peak right forward in the 'tween decks beyond the existing bulkhead. Evidences to support this location are the fact that the vessel had an extremely small forward house originally, which in a passenger ship would have to provide an unusually large galley, accommodations for the ship's petty officers, and even possibly some storage space for galley stores. This probably would leave insufficient space to accommodate the original ship's crew.

The earliest photograph of the ship shows portholes right forward in the 'tween decks, ventilating this area and lighting it, whereas portholes were not provided in the 'tween decks abaft it. The upright iron semi-circular bitt supporting the after end of the bowsprit shows some evidence of being used as a ventilator shaft to bring air into these quarters.

Entrance to this fo'c'sle would probably have been through a small scuttle located about where the present patent windlass is placed; that is, forward of the original log windlass. If further research substantiated the location of the sailor's fo'c'sle in this area, it would be a comparatively simple matter to construct wooden bunks in this triangular space, lining either side of the ship, two high, and at least one pair of bunks being located on the after bulkhead. A table amidships, not unlike the present table in this space, and some upright wooden lockers near the after bulkhead would provide the necessary amenities.

The San Francisco Maritime Museum has on file the plans of the ship ALCINOUS which showed the layout of bunks in a triangular fo'c'sle of this sort, and these can be supplied.

Regardless of whether this space is outfitted as a fo'c'sle, a makeshift bulkhead a few feet aft of the existing iron bulkhead should be removed.

This space has been suggested as a location for a working carpenter's shop if not outfitted as a fo'c'sle for the crew. A carpenter shop, with its inherent risk of fire, should be located in the space in the lower hold if the forepeak is used for display purposes.

## MASTS AND RIGGING:

Here will unquestionably be the most expensive part of the vessel's restoration. However, her masts and yards sent up again will be the STAR OF INDIA's crowning glory. Re-rigging the vessel will take her out of the hulk class and back into the realm of the deepwater square rigger. For reasons of economy it will probably make sense to rig her as a bark to begin with, but sometime in the future yards can be crossed again on the mizzen and she will be "ship" rigged again as she was when first launched.

Costs will be heavy because the majority of the wooden yards and some other wooden spars, such as the fore topmast, will have to be replaced, because rigging work in general is costly and should be done by professionals, and finally because a considerable amount of new rigging wire will have to be secured. Only a portion of the rigging now stored on board will be usable.

### Fore and Main Lower Masts

1. Send down topmast and lower yards, let go lanyards, remove mastcoats and wedges, and hoist masts out of ship for inspection and repairs.
2. Inspect maststep in lower hold for wasting of metal and repair as necessary.
3. Inspect mainmast for corrosion at weather deck level and fit sleeves if necessary as on foremast. Let go hinged band just above deck level and inspect for wastage underneath and repair as necessary.
4. Remove and discard Alaska Packer boat boom bands part way up lower mast between deck and futtock shroud band.
5. Remove woodwork on top platform and inspect cheekplates, trestletrees and rim of tops for corrosion and repair as necessary.
6. Sandblast exterior of masts and prime. Clean interior of masts by whatever method is most practicable and spray with Consol Oil.

#### Fore and Main Lower Masts - Continued

7. Open up serving in eyes of existing lower rigging in area where it passes over the bolsters and determine whether replacement of these lower shrouds is necessary.
8. Inspect partners and repair if necessary.
9. Replace masts in vessel, supply new wedges as necessary; replace shrouds and lower stays where unsound, stay masts and fit new mast-coats.

#### Fore and Main Topmasts

1. Survey topmast; repair or replace as necessary. Inspect trestletrees and crosstrees and iron work at topmast head. Where necessary repair; Scrape and paint masts, send up and stay.

#### Fore and Main Topgallant Masts

1. Survey topgallant masts now in lower hold. Repair or replace as necessary. Scrape and paint, send up and stay.

#### Mizzenmast

1. Send down topmast. Survey lower mast in place.

(NB. Captain A. C. Wilvers states that there is bad decay in the mizzen lower mast in the area within the ship's saloon and that this has been cemented up, and is now not readily detectable).

2. Repair or replace mizzen lower mast as necessary.
3. Survey topmast and repair or replace as necessary; scrape and paint, send up and stay.

### Mizzenmast - Continued

If the mizzen lower mast is seriously weakened by the decay that is believed to exist in the saloon portion, the mast may well have to be replaced completely. (A steel jacket in this area may, however, be an alternative). In this case, consideration should be given to replacing it with a three section, square rigged ship's mast such as the vessel originally carried. This will be somewhat more expensive but would be well worth the investment as at some future date square yards could be crossed on it, and the ship would be restored the way she was when launched.

In the meantime, such a three section mast could be left unadorned with square yards and would still serve as a common type of mast found in a bark. (Many full rigged ships were reduced to barks without altering the mizzenmast as was done in the EUTERPE.)

If this program for a three section replacement mast is entered into, the San Francisco Maritime Museum could supply a number of photographs of the details of wooden trestletrees, cross trees, top platforms, and the like, as found on such masts.

### Bowsprit and Jib Boom

1. Run in jib boom, survey and repair or replace as necessary. Scrape and paint jib boom.
2. Sandblast bowsprit and inspect for necessary repairs. Inspect bowsprit cap and iron work for repair.
3. Run out jib boom and replace all head rigging.

### Halliards

1. Overhaul tye chains, tye blocks, tye runners and halliard purchases for all yards and send aloft.

### Iron Yards

1. Sandblast existing three iron yards, (fore and main lower yards and one upper topsail yard); prime and survey for wastage needing repairs.



### Iron Yards - Continued

2. Inspect all iron fittings, repair, replace, or build up with welding where excessively worn.

### Wooden Yards

There is a probability that almost all of the wooden yards will have to be replaced. Large wooden spars can be secured from the Spar Manufacturing Company of Seattle, which has an over-sized wood lathe to form them from specially selected trees. L. P. H. Bolander and Sons, 1355 Evans Avenue, San Francisco, has a wood turning lathe capable of turning out yards of a size for use on the STAR OF INDIA.

1. Survey wooden yards and repair or replace as necessary. Survey iron work and replace, repair or build up with welding in excessively worn areas.
2. Make new footropes, brace pennants and lifts, (cross yards, reeving off new running gear as necessary).

### Spanker Boom and Gaff

1. Supply a spanker boom and gaff with necessary ironwork, topping lifts, vang and sheets.

It is possible that as a bark the EUTERPE never set a gaff headed spanker but rather a leg-o-mutton one Pacific Coast style. This would depend on whether she was re-rigged into a bark while still under the British flag, which seems unlikely. If the vessel is to remain a bark for all time, then a careful reconstruction of the bark rig put in her by the Americans should be attempted. This would mean a lighter gaff -- a monkey gaff in all probability -- rather than a heavy standing gaff for a gaff-headed spanker as is found in British barks. The Americans usually used this monkey gaff just to fly the ship's ensign.

### Blocks

A number of original blocks exist aboard the STAR OF INDIA and they should be carefully collected and used in places where they will be seen. They are recognizable by having an outside band of wrought iron, not galvanized. Other antique blocks are those that have a wire strop fitting into scores on the outside of the shell.

Both styles of block should be reserved for use in the lower part of the rigging where they can be seen. It might be possible to have a blockmaker and rigger make up more to the same pattern. (Herbert F. Cook, Tackleblocks, 183 Steuart Street, San Francisco).

The many blocks found aboard with galvanized iron strops that fit internally within the shells are valuable too, as these undoubtedly date from the vessel's STAR OF INDIA period. They are a later type of sailing ship block and still preserve the characteristic rounding on the outer cheeks of the shell.

A good number of extra blocks will be required, particularly small singles and a search for these should be started well in advance of the re-rigging of the vessel. Modern blocks usually have galvanized strappings and flat shell cheeks, and these, of course, can be used up aloft where their vintage is undetectable.

## RIGGING:

It is questionable whether as much as a third of the rigging now in place or stored aboard the STAR OF INDIA can be used to refit the vessel. Part of it will unquestionably be found to be deteriorated and another portion of the wrong lengths once the spars are sent aloft. Part of it will be too costly in labor (as compared to working with a spool of new rigging wire) to alter and re-use.

Additionally, there is no running rigging aboard and a substantial supply of manila will have to be obtained.

The best procedure would be to sort the rigging now in the lower hold in a warehouse ashore to determine which pieces are missing, and what the condition of the existing lengths are, and if the rigging superintendent so desires, measuring this assortment for length.

It is suggested that the services of Mr. John R. Dickerhoff, Rigging Superintendent of Moore Dry Dock Company, Oakland, California, be employed for the several days that it would take to make an appraisal of the rigging requirements of the ship, taking into consideration a survey of the rigging on hand, the amount and sizes of rigging to be purchased, (both wire and manila) the number of men that it would require to re-rig the ship and the length of time necessary.

Mr. Dickerhoff is the only practising Master Rigger on the West Coast who is fully conversant with the arts of re-rigging a square rigged vessel, and his appraisal would be invaluable. Beyond that, when the time came to actually carry out the rigging program, it is suggested that a contract with the Moore Dry Dock Company to obtain Mr. Dickerhoff's services as Master Rigger be made. He not only knows the tricks of the trade, but pushes the work at a rapid pace and in the end would afford a considerable saving in money in this critical part of the restoration. His skills were invaluable to the BALCLUTHA restoration. During the War he made a new rigging for the bark PAMIR.

A table of wire rigging sizes for an 1,100 ton bark built in 1867 is herewith given; wire sizes are given in circumference:

*Wrecking, Raising & Restoring*

RIGGING -- Continued:

FORE AND MAIN MASTS

Lower shrouds	4 inch circumference
Topmast backstays	3-3/4 inch "
Topgallant backstays	2-5/8 inch "
Royal backstays	----

Lower stays	4 inch circumference
Topmast stays	3-3/4 inch "
Topgallant stays	2-5/8 inch "
Royal stays	----

(Lanyards for lower deadeyes	3-3/4 inch hemp)
---------------------------------	------------------

MIZZEN MAST

Lower shrouds	3-1/2 inch circumference
Topmast backstays	3-1/8 inch "
Topgallant backstays	----
Royal backstays	----

Lower stays	3-1/2 inch "
Topmast stays	3 inch "
Topgallant stays	----

BOWSPRIT

Shrouds	3-1/2 inch circumference
---------	--------------------------

Sailing ship rigging wire, if available, is commonly galvanized iron wire, 6 x 19.

## ELECTRIC WIRING:

The services of a marine electrical contractor should be engaged to determine the wiring plan for the ship. Good marine practice should be followed throughout with watertight fixtures, conduits, etc.

At the time the wiring installation is planned, however, a representative of the Museum Association should work with the contractor, continually emphasizing the need to conceal contemporary electrical fixtures at every opportunity. With a little imagination and cooperation on the part of the electrical contractor, the majority of the conduit can be run so that it will be out of sight or inconspicuous.

## PLUMBING --- FIRE LINES:

Similarly, the piping system throughout the ship should be planned with a view to maximum concealment (such as running the pipes in the lower hold close under the 'tween deck beam). Fire stations should be planned, hoses provided, and plumbing worked out for the living quarters aboard.

## PAINTING:

### Outboard

Great care should be taken to lay out an exact replica of the port painting system shown in the Port Chalmers photograph of the ship, so that it is in no way distorted. These decorations on the topsides of iron vessels of this period were ritualistic, and any variation will result in an effect of crudity.

American Marine Paint Company paints, or equivalent, should be used over at least two coats of primer, in colors: black, white and light gray. When a satisfactory layout has been achieved, an outline for the port pattern can be marked on the ship's topsides with a center punch for future convenience.

### Inboard

It is suggested that the feel of antiquity about the decks of the STAR OF INDIA be emphasized with rich colors, in muted combinations. The expanses of teakwood and the touches of polished brass might well be considered complementary to this color scheme. In general, white is a color to be avoided as, at this period, it had a connotation of wooden American ship style. A color scheme for the STAR OF INDIA is being prepared by Mr. Max Lembke of San Francisco and will be presented for the consideration of the San Diego Maritime Museum Association.

*Living, Plumbing & Painting Dept. Staging*

# BUDGET AND STAFFING:

An annual budget for the BALCLUTHA, April 1st, 1958 to March 31st, 1959, is herewith given. This may serve as a guide to income and expenses when the STAR OF INDIA comes into her own as a full-fledged museum ship at a lucrative position at the Foot of Broadway, San Diego:

## EXPENSE - BALCLUTHA

### SALARIES:

<u>Position</u>	<u>Monthly</u>	<u>Total</u>	
Manager	\$ 500	\$ 6,000	
Rigger	500	6,000	
Utilityman	275	3,300	
Carpenter, $\frac{1}{2}$ time	163	1,956	
Installer, exhibits 1/5 time	60	720	
Watchmen (\$ 10.50 per night)		3,790	
Ticket Takers (\$ 1.625 per hr. )		6,100	
Relief Manager (Sat. & Sunday) (\$ 8.00 per day )		877	
		\$ 28,743	\$ 28,743

### GENERAL:

Maintenance and Repair	\$ 500	\$ 6,000	
Bottom Fund	1,150	13,800	
Utilities and Pier Rental	280	3,360	
Insurance	652	7,824	
Exhibits	100	1,200	
Publicity	100	1,200	
		\$ 33,384	\$ 33,384
			\$ 62,127

## INCOME

<u>Source</u>	<u>Total</u>	
Ship Admissions	\$ 85,830	
Leaflets	844	
Memberships	3,770	
Sales Counter	1,573	
Miscellaneous	843	
	\$ 92,860	\$ 92,860

Budget & Staffing



BUDGET AND STAFFING, Continued:

The foregoing budget is based upon actual earnings and expenses for the previous year, and actual income and expense is coming very close to the figures given. (There are, of course, other income and expense figures for our Association which are not relevant here).

Discussions with Trustees and staff of other museum ships throughout the world will reveal a tendency for a bureaucracy to build up in these operations if care is not taken to avoid this from the beginning. The most popular fallacy is that a "Captain" is needed. A museum ship, if she is to survive, is chiefly an exercise in maintenance, with some rather cut and dried administrative work thrown in. A salary paid to a Captain is a needless luxury.

The "Manager", (see budget above) who has charge of the ship BALCLUTHA is not a white collar position; this man is in work clothes and when he is not taking care of the bank deposit slips, the ordering of stores, the keeping of the log, the preparation of the payroll and other paperwork, he turns to and works alongside the rigger in keeping the vessel painted and the rigging tarred.

In the case of the BALCLUTHA, the Manager is supported by an administrative staff in the Museum proper who devote a portion of their time to the management of the ship. To adapt the situation to the STAR OF INDIA, which will not initially have a shore organization to help with secretarial work, public relations and the like, it will probably be found that the Ship Manager will have almost half of his time to devote to actual physical work once the operation of the vessel has settled down.

Other desirable variations on the BALCLUTHA staffing should be: a) a full time Carpenter, if possible, b) the half time services of an Able Seaman to assist the Rigger and the Manager with maintenance of hull and rigging, and c) a larger sum set aside for what here is labelled the "Bottom Fund".

The Bottom Fund is best described as heavy maintenance (or hull repairs) and the Maintenance and Repair fund here listed would best be described as light maintenance -- chiefly supplies for the men working aboard.